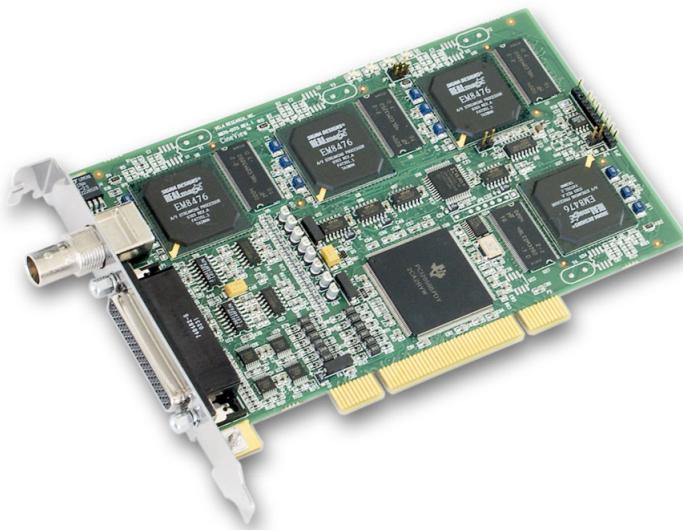


CineView® Quad

4-Channel PCI MPEG-2 A/V Decoder

Model 2000-0175

Installation and User Guide



Version 2.3



Document Part Number 9050-0175

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Table of Contents

List of Figures and Tables	iii
Chapter 1	
Getting Started	1
Introduction	1
CineView Quad Features	2
Hardware & Performance Features	2
Video & Audio Playback Features	3
Software Development Features	3
Minimum System Requirements	3
EMI Certification Note	4
Service Pack Availability	4
Hardware Installation	5
CineView Quad Decoder Board Installation	5
Jumper Settings	6
Hardware Driver and Software Installation	6
Preliminary Software Installation Procedures	6
Installing Hardware Drivers	7
Driver Installation on a Windows 2000 (SP 4) or Windows XP System	7
Driver Installation Difficulties	9
Vela System Software Installation	10
Changing or Uninstalling Vela Software	14
Product Licensing	15
Customer Support	15
Illustrations	16
Chapter 2	
CineView Quad Playback	19
Playback Applications	19
CineViewClient Startup and Playback	19
Setting CineViewClient Decoder Properties	20
Vela PlayAdvantage Lite Playback Module	20
Appendix A	
Specifications	23
Index	25

List of Figures and Tables

Chapter 1	
Getting Started	1
Figure 1-1. Initial Device Manager Screen	8
Figure 1-2. Device Manager Screen Following Driver & Software Install	10
Figure 1-3. Installation Wizard Welcome Screen	12
Figure 1-4. Installation Wizard Setup Screen	12
Figure 1-5. Installation Wizard Feature Select Screen	13
Figure 1-6. Installation Wizard Completion Screen	13
Figure 1-7. Vela Application Maintenance Screen	14
Figure 1-8. CineView Quad Decoder Board Layout	16
Figure 1-9. CineView Quad DB-44 Connector Pinout	17
Figure 1-10. CineView Quad Multi-Cable Assembly, p/n 6000-0175	18
Chapter 2	
CineView Quad Playback	19
Figure 2-1. CineViewClient Playback Application Main Screen	19
Figure 2-2. PlayAdvantage Playback GUI Screen	21
Appendix A	
Specifications	23
Index	25

Chapter 1

Getting Started

Introduction

Welcome to Version 2.3 of the CineView® Quad decoder, Model 2000-0175 decoder. This is Vela's next-generation half-size, PCI-based A/V decoder that supports four independent channels of high-quality MPEG-1 and MPEG-2 decoded audio and video. Using highly integrated decoder technology, the CineView Quad minimizes CPU utilization through efficient hardware and software optimization.

Multi-board capability is possible with the Quad, allowing users to scale up to four Quad decoders within a single PC, resulting in a total of 16 channels.

The CineView Quad supports playback data rates up to 15 Mbps.

A convenient A/V breakout cable plugs into the back of the Quad board for audio and video output needs. Video output consists of composite, YUV/RGB and S-video. PAL to NTSC television standards conversion allows video to be played on studio picture monitors independent of video format. Audio support for the Quad includes analog stereo, S/PDIF and Dolby® digital bitstream output.

The CineView Quad runs on Microsoft® Windows® and Linux and includes a new easy-to-use GUI (Graphical User Interface) with the PlayAdvantage™ Lite playback module from Vela's new multi-functional MediaAdvantage® Lite user software. Among its many features, PlayAdvantage allows for effortless playlist preparation with drag-and-drop functionality and file import capabilities.

Also supplied with the CineView Quad decoder is a convenient sample playback application, **CineViewClient**, from which MPEG files can be set up and viewed. It allows you to control most of the available functions of the CineView Quad.

NOTE: Sample applications such as "CineViewClient" are included for development purposes only and, as shipped, are not designed or certified as production applications.

CineView Quad software development tools include Software Developer's Kits (SDKs) for Linux (Red Hat) and Windows. Support for Microsoft DirectShow® is also included. Comprehensive, up-to-date SDK information and documentation can be found by examining the **VelaApiReference.chm** Help-formatted file located in the Vela system software CD-ROM.

NOTE: "CineView," "MediaAdvantage," and "PlayAdvantage" are trademarks or registered trademarks of Vela LP. "Dolby" is a registered trademark of Dolby Laboratories. All other trademarks, brand names, or product names appearing in this publication are registered to the respective companies or organizations that own the trademarks or brand names.

Note that much of this information and functionality also applies to Vela's CineView II decoder, Model 2000-0177, except that the CV-II is single-channel.

NOTE: Be sure to review the "readme" files on the system software CD-ROM for the very latest information on installation and performance issues.

CineView Quad Features

Hardware & Performance Features

- Standard half-size PCI form factor
- Four channel MPEG decoder on a single board
- Multiboard support: up to 16 total playback channels within a single PC
- External video sync lock
- PCI Bus mastering for low CPU utilization
- 33/66 MHz, 32-bit PCI Bus support
- Uses only one PCI slot and one shared IRQ
- Low power consumption. Support for universal 3.3v and 5.0v PCI slots.
- Interlace to progressive conversion: scaling to 480p, 720p, and 1080i
- Analog and digital audio
- Trick modes: pause, fast forward, slow, rewind
- Video outputs include interlaced or progressive, NTSC or PAL composite and S-video (Y/C), and YUV/RGB.
- Scan and frame-rate conversion of NTSC to PAL and PAL to NTSC
- ON-SCREEN DISPLAY (OSD)
 - Full or part-screen graphic display with full control; overlays video with text messages or graphics
 - Alpha blending for smooth graphic and text mixing
 - 256-color selectable palette out of 16.7 million colors
 - Region highlight feature for creating interactive menus with highlights
- Runs under Windows 2000, XP, or Linux (Red Hat 7.2 and compatible)
- Support for Microsoft DirectShow® 6.0
- PlayAdvantage user application software module from MediaAdvantage Lite

Video & Audio Playback Features

- Plays MPEG-1 and MPEG-2 streams
- Playback data rates up to 15 Mbps for NTSC, 12 Mbps for PAL
- MPEG audio layers 1 and 2
- Dolby (AC-3) bitstream out
- S/PDIF audio
- Sampling rates: 32 kHz, 44.1 kHz, 48 kHz and 96 kHz
- Supports data rates up to 384 Kbps
- Unbalanced analog stereo audio output
- Frequency response: 20 Hz to 22 kHz, $\pm 0.5\text{dB}$
- Software adjustable volume control
- BNC connector for external sync input
- A/V breakout cable mates with DB-44 and supports:
 - 4 ea. composite video (1v p-p, 75-ohm)
 - 4 ea. S-video (1v p-p, 75-ohm)
 - 4 ea. pairs of analog stereo audio
 - 4 ea. S/PDIF digital audio

Software Development Features

- Microsoft Windows and Linux support (Red Hat 7.2)
- Windows: Microsoft DirectShow and COM APIs are available
- Linux: C / C++ shared libraries are available
- Easy to use Software Development Kit (optional). Powerful API includes a modifiable sample application. (Note that Vela SDK sample applications are included for development purposes only and, as shipped, are not designed or certified as production applications.) Includes full support for the CineView Quad's advanced decoder chip. Includes complete HTML documentation.

Minimum System Requirements

- Microsoft® Windows® 2000, 2000 Server, 2003 Server, XP or Linux (Version 2.4 kernel).
- 800 Mhz IBM® PC-compatible Pentium® or equivalent; dual processors recommended when transcoding.

- 256 MB RAM, plus RAM used by video server application, if applicable.
- Fast (7200 RPM) IDE, serial ATA or fast/wide SCSI drive recommended.
- CD-ROM or DVD-ROM drive (for installation of system files).
- 200MB available hard disk space (for MediaAdvantage Lite installation, including Microsoft .NET Framework and Microsoft MSDE) plus disk space for clips and segments.
- Plug and Play BIOS support.
- PCI-compliant VGA controller with accessible linear frame buffer (support for high bit 16 or high bit 24 required).

EMI Certification Note

Vela does not certify EMI requirements for cable lengths greater than one meter (39"). This includes network cables, keyboard extension cables, etc.

Service Pack Availability

Vela no longer includes Windows operating system Service Packs with Vela system software, due to file size constraints and the increasingly frequent need to update or patch the service packs.

To find out if your system is a candidate for a service pack or other system upgrade, and to download the latest versions, please contact the Microsoft Web site at www.microsoft.com.

Hardware Installation

WARNING!

Hazardous electrical voltages may be present in your computer when its cover is removed for installation of this decoder. Follow proper safety procedures during installation. Remove all power from the computer before installing the decoder board.

STATIC DISCHARGE CAUTION

To avoid damage to the decoder from static discharge, keep the board in its protective bag until ready to be installed. If possible, use an antistatic strap when handling the decoder board. Avoid touching components and edge connectors.

CineView Quad Decoder Board Installation

1. Power off the PC, unplug it from the AC source, and remove the cover or cabinet to expose the chassis and motherboard.
2. Configure decoder board jumpers if needed. See “Jumper Settings,” page 6.
3. It is important that the CineView Quad decoder board be plugged into a PCI bus master slot, making sure the edge connectors are fully engaged. Secure the board’s mounting bracket to the PC chassis. Replace the PC’s cabinet or cover.
4. Connect an external sync source to the BNC connector on the rear of the decoder, if desired.
5. Connect the audio and video multicable, part number 6000-0175, to the 44-pin D-connector on the rear of the board. Then route the individual, channel-specific A/V cables as desired. Pinout information and drawings for the 44-pin D-connector can be found in Figure 1-9. A view of the cable can be found in Figure 1-10.

NOTE: The multicable output cables for each type of signal are factory numbered from 1–4 so that proper output channel continuity can be maintained. Please note that, depending on the operating system used and how the BIOS configures the decoder, the system software may see the output channel order differently (for example, 1-3-2-4). Output channel numbering is different for Windows and for Linux, and can differ even among various Windows versions. However, once installed, the output channel sequence, as determined by the particular operating system, will remain in place under that operating system.

Jumper Settings

The following CineView Quad jumpers and header connectors can be configured as indicated, depending on the video format and output type desired. Note that J2, J4, J5, and J6 set the video output type for each of the four output channels. See Figure 1-8, page 16, for location of these jumpers.

- JP2:** PAL enable. Install jumper for PAL source synclock.
- JP3:** Synclock termination enable. Install jumper for 75-ohm termination.
- J2:** Selects YUV/RGB/S-video/composite or S-video/composite.
 - Pins 1, 2 for YUV, RGB, S-video, and composite
 - Pins 2, 3 for S-video and composite only
- J4:** Selects YUV/RGB/S-video/composite or S-video/composite.
 - Pins 1, 2 for YUV, RGB, S-video, and composite
 - Pins 2, 3 for S-video and composite only
- J5:** Selects YUV/RGB/S-video/composite or S-video/composite.
 - Pins 1, 2 for YUV, RGB, S-video, and composite
 - Pins 2, 3 for S-video and composite only
- J6:** Selects YUV/RGB/S-video/composite or S-video/composite.
 - Pins 1, 2 for YUV, RGB, S-video, and composite
 - Pins 2, 3 for S-video and composite only

Hardware Driver and Software Installation

Preliminary Software Installation Procedures

NOTE: If you intend to run Windows 2000 as your operating system, it is recommended that Service Pack 4 be installed for proper Vela system software operation. See Step 2 below if you need to install Service Pack 4.

All of the software that you need to install the CineView Quad decoder is located on a single CD-ROM. Just follow these steps, remembering that a number of reboots may be required during the installation process. **Do not remove the CD-ROM disc from the drive until you've completed the last step.**

1. Uninstall any CineView Pro and Argus software currently on the system. Use the Windows Control Panel > Add/Remove Programs application, following instructions in the user manual that accompanied the already-installed software.

2. For Windows 2000, install Windows 2000 Service Pack 4, if it is not already installed on your system. You can download this service pack and its installation instructions from the Microsoft Web site on the Internet.
3. Following installation of SP 4, install the CineView Quad drivers and application-level software (see below).

Installing Hardware Drivers

Driver Installation on a Windows 2000 (SP 4) or Windows XP System

If you have never before installed the CineView Quad decoder on your system, you must install the device drivers. The drivers are located on the installation CD-ROM disc, in the following folder: Drivers\Cineview II and Quad.

NOTE: As noted in the steps below, you will need to perform parts of this procedure four times to install the four separate drivers required for the Quad decoder.

1. Be sure the CineView Quad decoder is installed per above instructions.
2. Power up the system. If the “Add New Hardware Wizard” appears when you boot your system, click Cancel. (You may see this screen four times, once for each of the four Quad drivers you install.)
3. Insert the Vela System Software CD-ROM disc into the CD drive.
4. Exit the Vela System Software Setup screen (Figure 1-3) if it appears.
5. On your desktop, right click on My Computer and a menu should appear. Select Properties.
6. Click on the tab labeled Hardware.
7. Click on Device Manager. A screen will appear, similar to that in Figure 1-1.

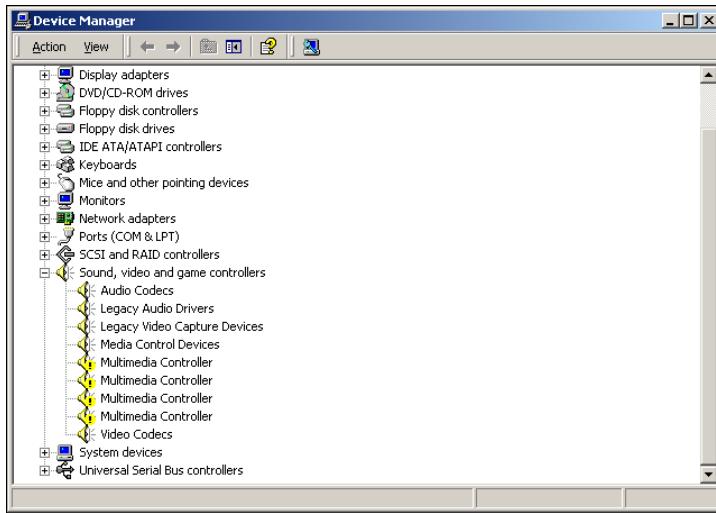


Figure 1-1. Initial Device Manager Screen

8. Search for the “Multimedia Controller.” This device can usually be found in one of the following directories: Sound, Video and Game Controllers, or Other Devices. Right-click on “Multimedia Controller.”
9. Select Properties from the Menu.
10. Under the General tab, click on Reinstall Driver.
11. Prompt: “Upgrade Device Driver Wizard.” Click Next.
12. Prompt: “Install Hardware Device Drivers.” Select the radio button “Search for my suitable driver for my device,” then click Next.
13. Prompt: “Locate Driver Files.” Check “Specify a Location,” uncheck everything else and click Next, or, if you are installing the software from the CD, select the CD Drive option (if you choose this second option, you can skip step 15.)
14. A message box will appear that prompts you to browse your computer until you find a driver for the Multimedia Controller. Check Browse to select the device from the following path on the CD: Drivers\Cineview II and Quad. The driver file is named “Symphony.inf.” (Same for all four drivers.) Click OK.
15. If prompted, you will need to perform these additional steps:
 - a. Prompt: “Driver Files Search Result.” Message displays “Windows

found a driver that is a closer match for this device than your current driver.” Click Next.

- b. When the “Digital Signature Not Found” screen appears, click Yes.
16. When the driver installation is complete and the prompt “Completing the Upgrade Device Driver Wizard” appears, click Finish. Close the screens and return to Device Manager. Do **not** reboot the computer at this time.
17. Return to Step 7 to load the second CineView Quad driver, and do so again for the third and fourth. Do not reboot until the final (fourth) driver is installed.
18. When the four CineView Quad drivers have been installed properly, and the Device Manager screen appears, you may notice exclamation marks on the names of the new drivers. Following Vela system software installation, which starts on page 10, the exclamation marks will disappear and the resultant Device Manager screen will look similar to that in Figure 1-2. Note that the Quad decoder drivers will carry the name of “Sigma Designs Symphony MPEG Decoder.”
19. Reboot the computer.
20. The Vela System Software Setup screen should appear after the reboot. If it does not, run **setup.exe** from the CD-ROM or Start > Run.

Driver Installation Difficulties

If you experience difficulty installing the drivers under Windows 2000 with Service Pack 4 please try the following steps.

1. From Start > Run, run **gpedit.msc**. This will launch the Group Policy Editor.
2. Go to Local Computer Policy > Computer Configuration > Windows Settings > Security Settings > Local Policies > Security Options.
3. Change the policy for “Unsigned driver installation behavior” to “Warn but allow install.”
4. Close the Group Policy Editor, reboot the computer, and re-install the driver.

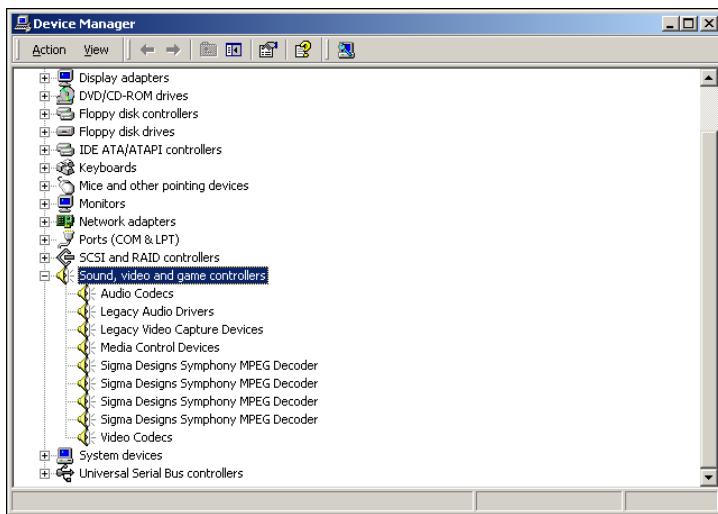


Figure 1-2. Device Manager Screen Following Driver & Software Install

Vela System Software Installation

Be sure to review the “readme” files on the system software CD-ROM for the very latest information on installation and performance issues.

The current version of software has been qualified to run under Windows 2000 (SP 4) or Windows XP. Windows NT, Windows 95 and Windows 98 are not supported. Note that first-generation PCI decoders such as the CineView Pro, the Pro XL and the Pro LE are not supported with the software included in this release.

Windows 2000 users should install Service Pack 4. See page 6 for SP 4 installation.

If you are upgrading a previous version of software with this release, Version 2.3, you must first uninstall the existing version of CineView Quad software if you haven't already done so. To do so, select the “Add or Remove Programs” option on the Control Panel, select the name “CineView Quad, then click “Change/Remove.”

After the previous version has been removed, you're ready to install this latest version of Vela software. All the software you need for the CineView Quad decoder is located on the installation CD. Just follow the steps that follow, noting that several reboots may be required during the installation process.

Do not remove the CD from the drive until you've completed the final step.

1. Insert the supplied Vela system CD into the CD-ROM drive. A Vela System Software Setup installation screen should appear. If it doesn't, run **setup.exe** from the CD. Select "Install Vela System Software."
2. Next, an Installation Wizard welcome screen (Figure 1-3) will appear. For the most part, all the screens are self-explanatory and guide you from one install point to the next. Click Next.
3. (Figure 1-4) Select the type of installation you prefer (Typical, Complete, or Custom). At this point the required Microsoft .Net Framework v1.1 will automatically be installed if it is not detected. Click Next.
4. The "Select Features" screen appears next (Figure 1-5). Select the requested features for installation, including the CineView Quad (the selection includes the CineView II name), by selecting the disk drive icon displayed before each option. Select either the "will be installed on local hard drive option" or "entire feature will be unavailable option." You may also choose to install the CineView SDK at this time if you have purchased it. Note that some options may not be currently supported. Common files will be installed when needed. Click Next.
5. Keep the suggested location (C:\Program Files\Vela Research) as the installation folder for each application. Click Next.
6. The progress of the installation will be graphically displayed. Throughout the installation you may be asked to accept product license agreements. Please review the license agreements and accept them.
7. (Figure 1-6) The Install Wizard notifies you that the install is complete and that it is necessary to restart your system in order for the installation to take effect. Click OK to reboot.

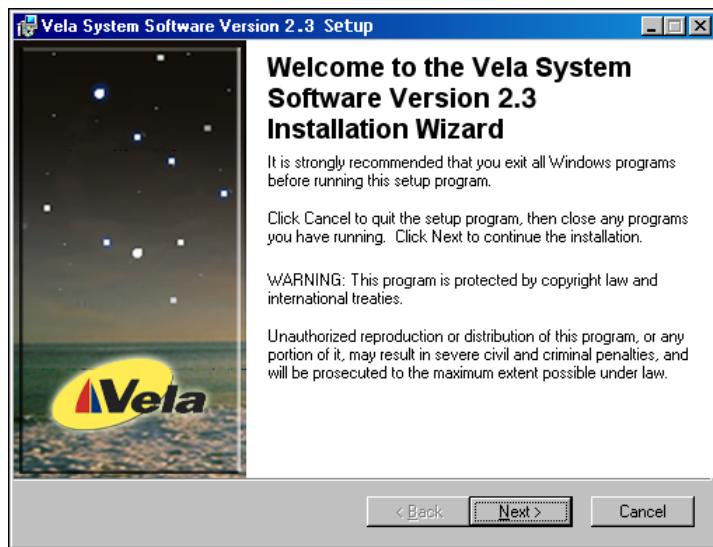


Figure 1-3. Installation Wizard Welcome Screen

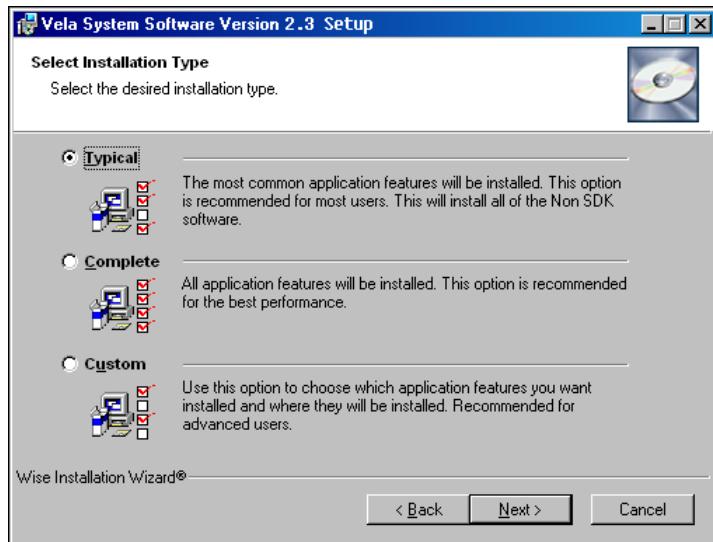


Figure 1-4. Installation Wizard Setup Screen

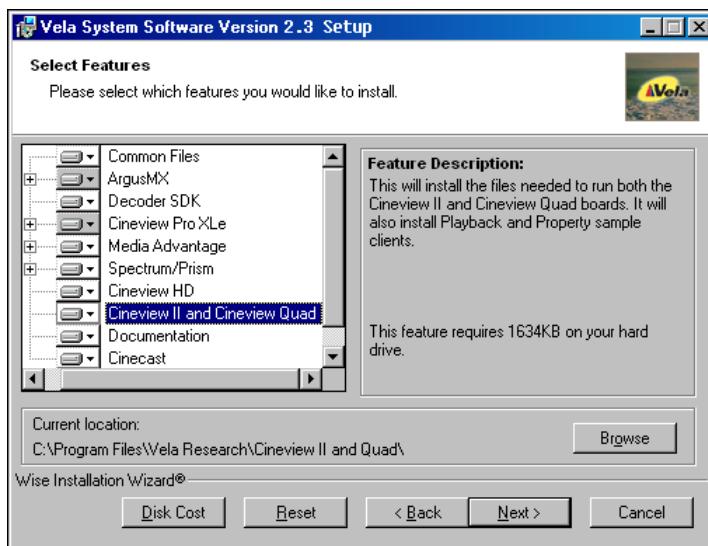


Figure 1-5. Installation Wizard Feature Select Screen



Figure 1-6. Installation Wizard Completion Screen

Changing or Uninstalling Vela Software

To modify or remove Vela system software, go to the Windows Control Panel and open the “Add/Remove Programs” application. Look for an entry containing the phrase “Vela System Software” and click on it, then click on the “Change” button. A versatile and helpful “Application Maintenance” window (Figure 1-7) will appear. From this application you can choose to:

- Change which application features are installed. Basically, it displays the Select Features screen, explained earlier, which configures individual features and applications.
- Reinstall corrupt or missing files, Registry keys and shortcuts. Note that preferences stored in the Registry may be set to default values.
- Completely uninstall and remove Vela system software. If this selection is made, an uninstall screen will appear. Click Next on the window to uninstall all Vela system software. Note that a checkbox allows you to keep the current application database(s) you may have created for clips, playlists, etc. **Note that if the checkbox is cleared, all Vela-specific databases will be deleted.**

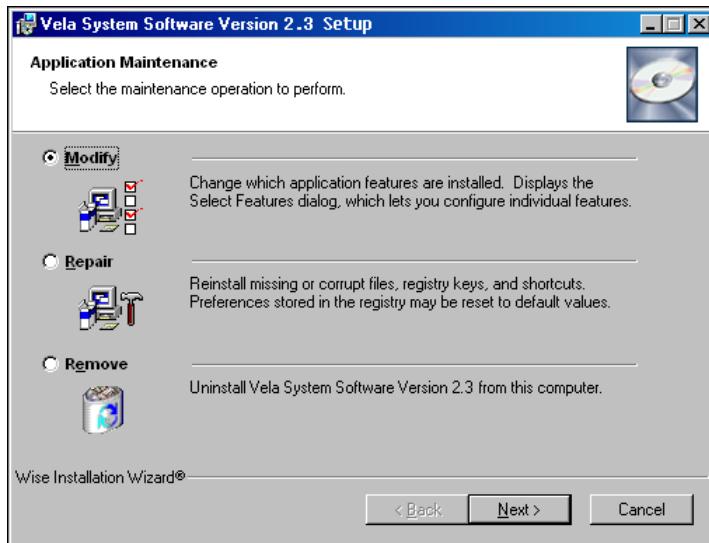


Figure 1-7. Vela Application Maintenance Screen

Product Licensing

After you have installed your CineView Quad software, it may be necessary to license the product and/or software purchased, including any options such as machine control, SDKs, etc.

From the Start menu, select Start > Programs > Vela Research > Licensing.

Enter the strings in the shaded box of the licensing form shipped with your product into the dialog box exactly as they are given, one at a time, by selecting the + key, entering the string and pressing OK. If you have any difficulty entering a license during the install process, you can re-enter it anytime using this process. The new key will supersede any previous key that you may have entered.

Contact Vela technical support if you lose or require additional license keys, or if you need additional help. See the “Customer Support” contact methods below.

Customer Support

In the event of problems with your CineView Quad 4-channel decoder, please contact the Vela Training and Support staff as follows:

- Toll-free: (800) 243-7855
- Phone: (727) 507-5301
- Fax: (727) 507-5310
- E-mail: support@vela.com
- World Wide Web — <http://www.vela.com>

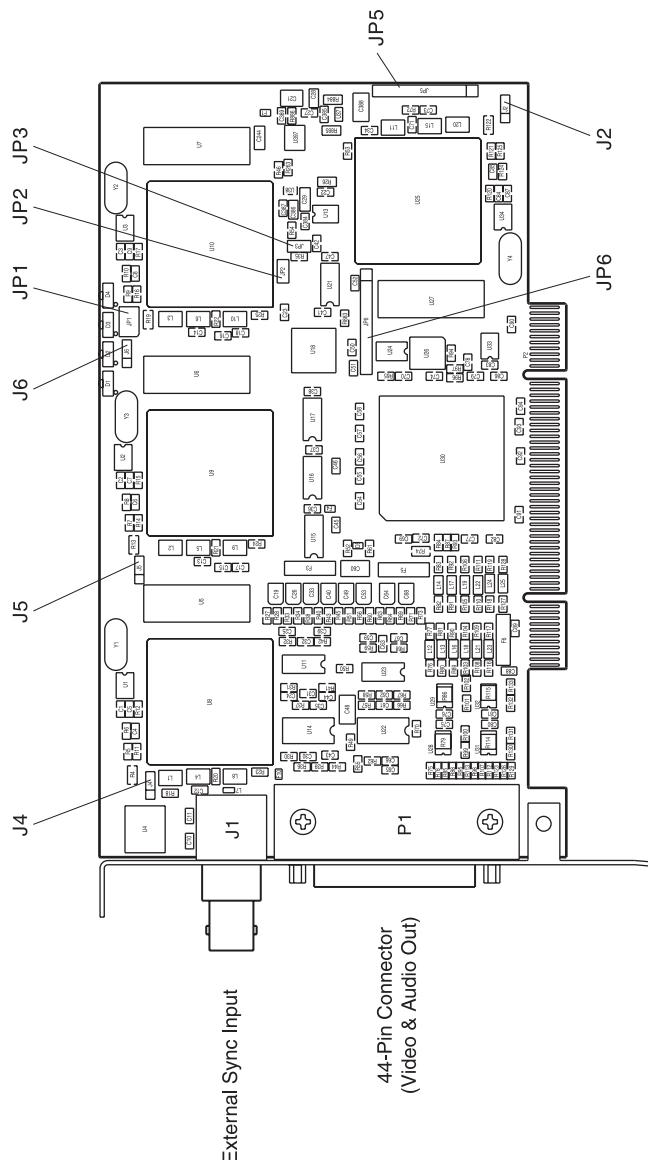
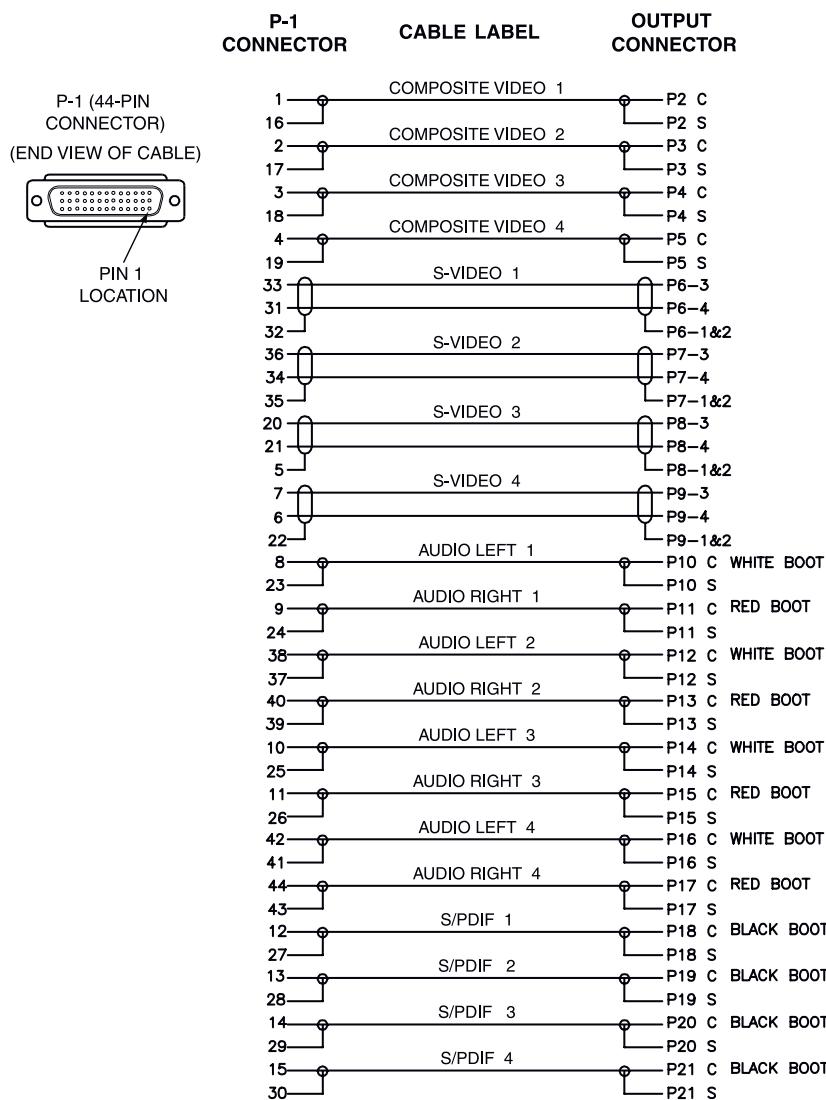


Figure 1-8. CineView Quad Decoder Board Layout



SEE CABLE ASSEMBLY DRAWING
FOR CONNECTOR REFERENCE

Figure 1-9. CineView Quad DB-44 Connector Pinout

CineView Quad Multi-Cable p/n 6000-0175

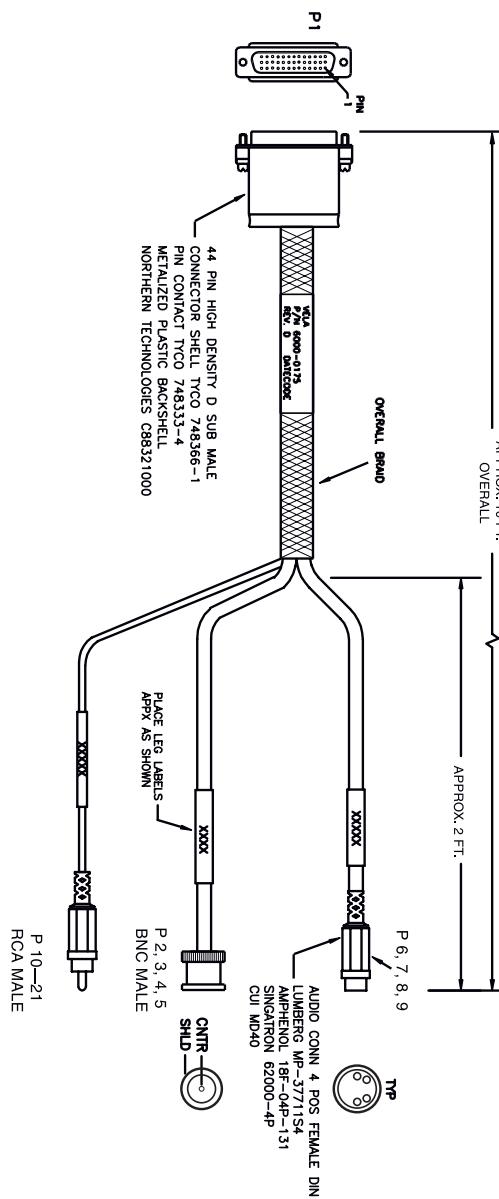


Figure 1-10. CineView Quad Multi-Cable Assembly, p/n 6000-0175

Chapter 2

CineView Quad Playback

Playback Applications

Supplied with the CineView Quad decoder is a convenient sample playback application, **CineViewClient**, from which MPEG files can be set up and viewed. It allows you to control most of the available functions of the CineView Quad.

NOTE: Sample applications such as “CineViewClient” are included for development purposes only and, as shipped, are not designed or certified as production applications. Another included application is the PlayAdvantage™ Lite module from Vela’s new multi-functional MediaAdvantage® Lite user software. For more information on the module, refer to “Vela PlayAdvantage Lite Playback Module,” page 20.

CineViewClient Startup and Playback

To launch the CineViewClient playback application, go to Start > Programs > Vela Research > CineView II and Quad > CineviewClient. A full-featured playback window will appear, similar to that shown in Figure 2-1.

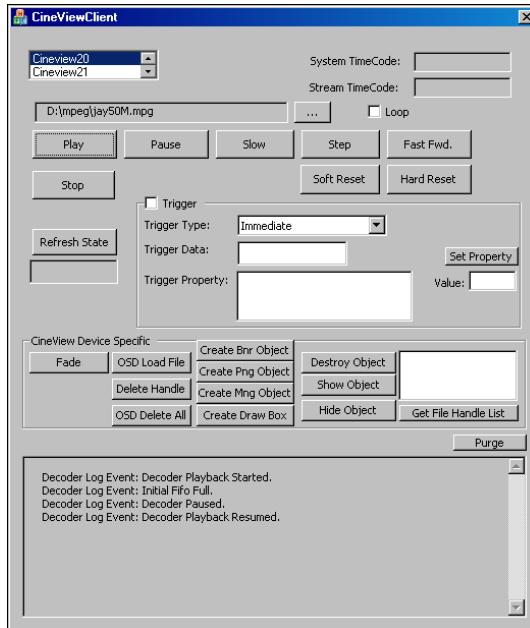


Figure 2-1. CineViewClient Playback Application Main Screen

Decoder Selector – Selects the desired playback decoder from this list.

System Time Code – Not currently implemented.

Stream Time Code – Not currently implemented.

MPEG File Browser – Use the browser to locate a desired MPEG playback file. It will be displayed in the accompanying text box.

Loop – Check this box if you want the selected file to play continuously.

Buttons: Play, Pause, Slow, Step, Fast Forward, Stop – Use as needed to start and control playback of the selected MPEG file.

Get Current State – Gets the current state of the board and displays it in the box next to the button (i.e. initialized, playing, fast forwarding, etc).

Reset – Sends a reset command to the API.

Event Log Window – Displays recent playback actions and events.

Setting CineViewClient Decoder Properties

By going to Start > Programs > Vela Research > > CineView II and Quad > Property Client, the user can set or adjust decoder properties as desired. This can be done concurrently with the Playback window open.

Information on setting the properties can be found by examining the **VelaApiReference.chm** Help-formatted file located in the Vela system software CD-ROM.

Vela PlayAdvantage Lite Playback Module

The CineView Quad supports the easy-to-use PlayAdvantage Lite module from Vela's new multi-functional MediaAdvantage Lite user software. Among its many features, PlayAdvantage allows for effortless playlist preparation with convenient drag-and-drop functionality and file import capabilities.

Start up PlayAdvantage Lite by double-clicking the desktop icon. On the left-hand side of your screen, under the MediaAdvantage Systems section, expand the PlayAdvantage™ option. Select the desired decoder by name. (If there is more than one decoder of the same type installed, subsequent ones will have numbers, e.g., (2), (3) appended to the name).

This will bring up the playback window shown in Figure 2-2. If you want to enable VGA display, click the VGA Display button in the upper left corner (shown here with arrow), then select the desired decoder.

Refer to PlayAdvantage on-line Help for details on playback functionality.

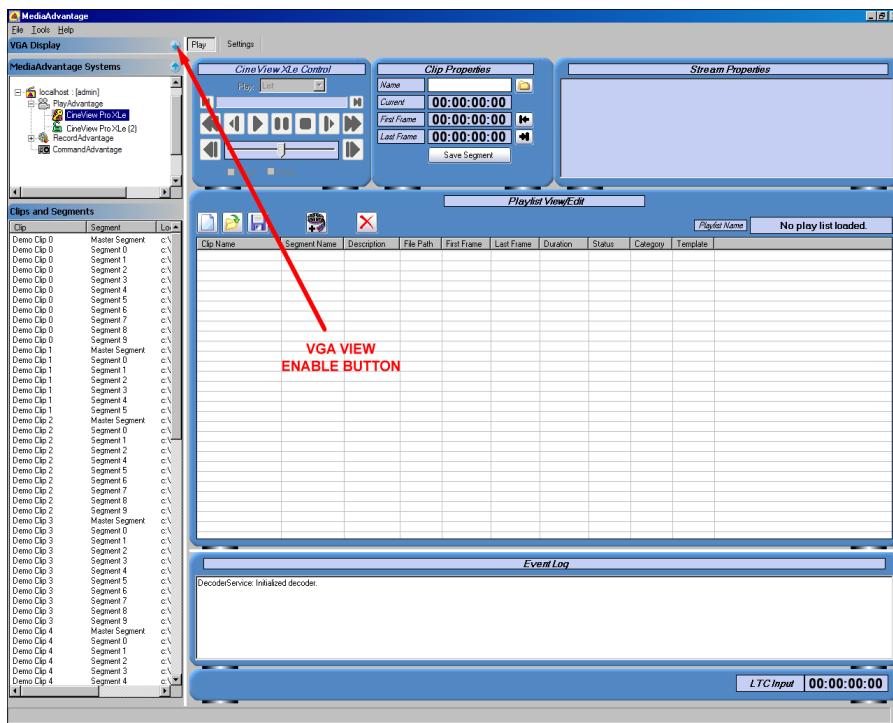


Figure 2-2. PlayAdvantage Playback GUI Screen

Appendix A

Specifications

CineView Quad Decoder, Model 2000-0175

Video

- Decodes MPEG-1 and MPEG-2 streams
- Playback data rates up to 15 Mbps for NTSC, 12 Mbps for PAL
- Signal to Noise Ratio: 65dB
- Frequency response: 0 to 4.1 MHz \pm 5dB
- Sync tip: 40 IRE \pm 4
- Luma non-linearity: 5%
- Differential phase: \pm 1o

Audio

- MPEG audio layers 1 and 2
- Dolby® (AC-3) bitstream out
- Sampling rates: 32 kHz, 44.1 kHz, 48 kHz and 96 kHz
- Supports data rates up to 384 Kbps
- Software adjustable volume control
- S/PDIF
 - 0.5v p-p, 75-ohm
 - Rise and fall time: $> 0.4\mu$ i measured from 10% to 90%, < 10 ns jitter
- Analog
 - Unbalanced analog stereo audio output
 - Reference level: 0.5v p-p \pm 10% (unbalanced)
 - Frequency response: 20 Hz to 22 kHz, \pm 0.5dB
 - THD+n: @ 20 Hz to 22 kHz < 0.5 %, < 10 ns jitter

Connectors

- Universal PCI edge connector
- BNC connector on rear of decoder for external sync input
- A/V breakout cable mates with DB-44 and supports:
 - 4 ea. composite video (1v p-p, 75-ohm)
 - 4 ea. S-video (1v p-p, 75-ohm)
 - 4 ea. pairs of analog stereo audio
 - 4 ea. S/PDIF digital audio

Power Requirements

- Support for 3.3 & 5.0 volt PCI slots

Dimensions

- Standard half-size PCI form factor
- 6.5" L x 4.0" H (16.5cm L x 10.2cm H), excluding rear connectors

Minimum System Requirements

- Microsoft® Windows® 2000, 2000 Server, 2003 Server, XP or Linux (Version 2.4 kernel)
- 800 Mhz IBM® PC-compatible Pentium or equivalent (dual processors recommended when transcoding)
- 256 MB RAM, plus RAM used by video server application
- Fast (7200 RPM) IDE, serial ATA or fast/wide SCSI drive recommended
- CD-ROM or DVD-ROM drive (for installation of system files)
- 200MB available hard disk space (for MediaAdvantage Lite installation, including Microsoft .NET Framework and Microsoft MSDE) plus disk space for clips and segments

Software

- Includes drivers, easy-to-use Application Programming Interface (API) and sample applications
- Complete HTML documentation
- SDKs: Windows DirectShow, Linux, Microsoft COM
- Compatible with currently-released CineView Linux and Windows SDKs
- Runs under Linux (Red Hat 7.2), Windows 2000, and Windows XP
- File and streaming playback from supported servers
- Supports “push” and “pull” modes
- Support for Microsoft DirectShow® 6.0
- Complete HTML documentation

All specifications subject to change without notice.

Index

A

AES/EBU Jumper Settings 6
API Information 1, 20

C

CD-ROM Installation Disc 11
CineView® Decoder 20
CineViewClient 1, 19
Customer Support 15

D

Decoder Properties 20
DirectShow® 2

E

Electrical Voltage Warning 5

H

Hardware Installation 5

J

Jumper Settings 6

L

Licensing Keys 15
Linux 3

M

MediaAdvantage® Lite 1
Minimum System Requirements 3

P

PCI Bus 4, 5
PlayAdvantage™ 20
PlayAdvantage Lite 1, 19, 20
Plug and Play 4

S

Sample Playback Application 1, 19
SDK Guide 20
Specifications 23

U

Uninstalling Software 14

V

VGA Display 20
Video 5
Video Frame Buffer 4